

DOCKET NO. IB-1330D

Express Mailing Label No. EF333129215US

IN THE CLAIMS:

Please cancel claims 1-51.

Please add the following new claims 52-78, which constitute non-elected claims 74-100 of parent application Serial No. 09/349,833:

52. A luminescent semiconductor nanocrystal probe, comprising:

a) a water-soluble semiconductor nanocrystal comprising:

i) a core comprising a first semiconductor material; and

ii) a core-overcoating shell comprising a second semiconductor material;

b) a linking agent comprising a first portion and a second portion, wherein said first portion is linked to said water-soluble semiconductor nanocrystal; and

c) an affinity molecule linked to said second portion of said linking agent.

53. The probe of claim 52, wherein said first semiconductor material is a II-VI semiconductor or a III-V semiconductor.

54. The probe of claim 53, wherein said first semiconductor material is a II-VI semiconductor.

55. The probe of claim 53, wherein said first semiconductor material is a III-V semiconductor.

⁵
56. The probe of claim ³54, wherein said first semiconductor material is MgS, MgSe, MgTe, CaS, CaSe, CaTe, SrS, SrSe, SrTe, BaS, BaSe, BaTe, ZnS, ZnSe, ZnTe, CdS, CdSe, CdTe, HgS, HgSe, or HgTe.

⁶
57. The probe of claim ⁴55, wherein said first semiconductor material is GaAs, InGaAs, InP, or InAs.

¹
58. The probe of claim ¹52, wherein said second semiconductor material is a II-VI semiconductor or a III-V semiconductor.

⁸
59. The probe of claim ⁷58, wherein said second semiconductor material is a II-VI semiconductor.

⁹
60. The probe of claim ⁷58, wherein said second semiconductor material is a III-V semiconductor.

09865130-052401

¹⁰ 61. The probe of claim ⁸59, wherein said second semiconductor material is MgS, MgSe, MgTe, CaS, CaSe, CaTe, SrS, SrSe, SrTe, BaS, BaSe, BaTe, ZnS, ZnSe, ZnTe, CdS, CdSe, CdTe, HgS, HgSe, or HgTe.

¹¹ 62. The probe of claim ⁹60, wherein said second semiconductor material is GaAs, InGaAs, InP, or InAs.

¹² 63. The probe of claim ¹52, wherein said first semiconductor material is CdSe and said second semiconductor material is ZnS.

¹³ 64. The probe of claim ¹52, wherein said linking agent comprises a thiol moiety.

¹⁴ 65. The probe of claim ¹³64, wherein said linking agent further comprises an alkyl group.

¹⁵ 66. The probe of claim ¹⁴65, wherein said alkyl group is a propyl group.

¹⁶ 67. The probe of claim ¹52, wherein said linking agent is N-(3-aminopropyl)-3-mercapto-benzamide, 3-aminopropyl-trimethoxysilane, 3-mercaptopropyl-trimethoxysilane, 3-maleimidopropyl-trimethoxysilane, and 3-hydrazidopropyl-trimethoxysilane.

21

A

09865130-05240-1

¹⁷
68. The probe of claim 52¹, wherein said nanocrystal compound further comprises a glass coating on said shell.

¹⁸ ¹⁷
69. The probe of claim 68, wherein said glass coating comprises a polymeric oxide.

¹⁹ ¹⁸
70. The probe of claim 69, wherein said polymeric oxide is an oxide of silicon, an oxide of boron, an oxide of phosphorus, or a mixture thereof.

²⁰ ¹⁸
71. The probe of claim 69, wherein said glass coating further comprises metal silicate, a metal borate or a metal phosphate.

²¹ ¹⁷
72. The probe of claim 68, wherein said linking agent is selected from the group consisting of N-(3-aminopropyl)-3-mercapto-benzamide, 3-aminopropyl-trimethoxysilane, 3-mercaptopropyl-trimethoxysilane, 3-maleimidopropyl-trimethoxysilane, and 3-hydrazidopropyl-trimethoxysilane.

²² ¹
73. The probe of claim 52, wherein said affinity molecule is an antibody, a nucleic acid, a protein, a polysaccharide or a small molecule.

²³ ¹
74. The probe of claim 52, wherein said affinity molecule is avidin, streptavidin, biotin or anti-digoxigenin.

²⁴ 75. The probe of claim 52¹, wherein said affinity molecule is streptavidin.

²⁵ 76. The probe of claim 52¹, wherein said linking agent is 3-mercaptopropyl-trimethoxysilane and said affinity molecule is avidin, streptavidin, biotin or anti-digoxigenin.

²⁶ 77. The probe of claim 52¹, wherein said linking agent is 3-mercaptopropyl-trimethoxysilane and said affinity molecule is streptavidin.

²⁷ 78. The probe of claim 52¹, wherein said shell epitaxially surrounds said core.

REMARKS

Claims 1-51 have been cancelled by this preliminary amendment to the divisional application being filed herewith. Claims 1-51 constitute the original claims filed in Serial No. 08/978,450 (now U.S. Patent 5,990,479). Parent application Serial No. 09/349,833 (the parent of this divisional application) was filed as a continuation of Serial No. 08/978,450. New claims 52-100 were added by amendment to parent application Serial No. 09/349,833. These new claims 52-100 were subject to restriction to Group I, claims 52-73; and Group II, claims 74-100. Group I, claims 52-73 were elected for prosecution in parent application Serial No. 09/349,833. The claims of the non-elected Group II (claims 74-100 in parent application Serial No. 09/349,833) are therefore presented for prosecution in this divisional application as new claims 52-78.

0955130-052401